

Vapor Intrusion Sampling to Begin this winter

Keystone Corridor Groundwater Contamination Site

Indianapolis, Indiana

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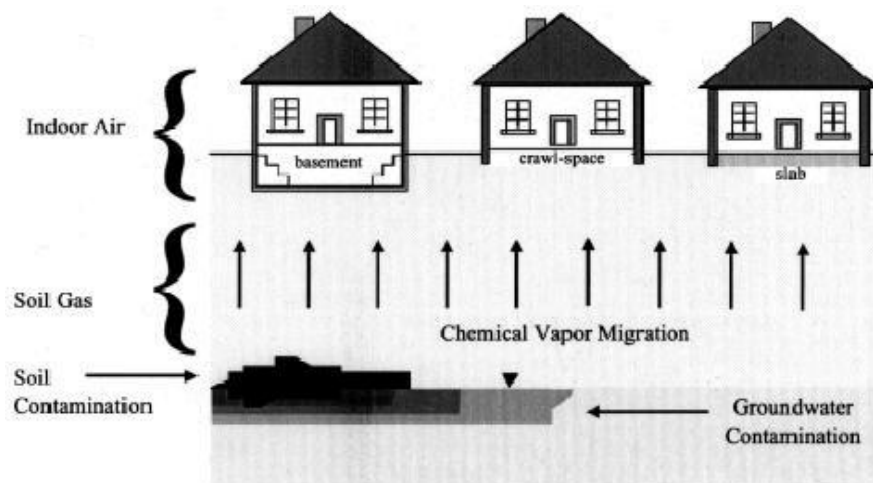
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U.S. Environmental Protection Agency is planning a vapor intrusion study in the residential and industrial/commercial area of the Keystone Corridor Groundwater Contamination site. Vapor intrusion occurs when chemicals in the underground water or soil give off dangerous gases that can seep into buildings through foundation cracks and holes, causing unsafe indoor air pollution.

The site contains a groundwater plume, which is an underground mass of contaminated water. The groundwater plume consists of chlorinated solvents that were used in a variety of industrial applications including dry cleaning operations and metalworking industries.

Soil gas, sub-slab and indoor air tests are performed to find vapor intrusion problems. In soil gas and sub-slab testing, probes are dug into the ground or under building foundations to sniff out hazardous vapors trapped between dirt particles. Air sampling measures the concentrations of hazardous gases in the indoor air.



This diagram illustrates how hazardous vapors trapped in soil and underground water supplies (groundwater) can move into homes and buildings and cause indoor air pollution. This process is called vapor intrusion. EPA will be checking for vapor intrusion during its investigation at the Keystone Corridor site.

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Steps in the study of vapor intrusion

EPA first takes samples of gas in the soil and ground water near a site with known contamination. If we don't find the type of contamination that can turn into a gas – known as “volatile” – then vapor intrusion should not be a problem.

If we find volatile contamination, we may widen the search to include sampling closer to or on individual properties. The next step is to take vapor samples from the soil under building foundations. These are called “sub-slab soil” gas samples.

The results of these samples will tell EPA if indoor air samples are needed. The indoor air samples will tell us if there are vapors in the indoor air. The samples will also show if the vapors pose a health risk, or if they are at levels normally present in most buildings.

EPA does not generally recommend indoor air sampling before sub-slab sampling because indoor air quality varies widely day to day. Also, household products may interfere with sampling results.

Finally, we will determine if there is enough of a problem to take action. Environmental law and EPA regulations tell us when we need to do something to protect your family's health.

If EPA finds a problem

The most common solution is to install systems often used to reduce naturally occurring radon that seeps into homes in some geographic areas. These systems remove soil vapors from below basements or foundations before they enter homes.

Vapors are vented into the outside air where they become dispersed and harmless. These systems use minimal electricity and do not affect heating and cooling efficiency. Once the source of the vapors is eliminated, the systems should no longer be needed.

Next Steps

Properties will be selected for indoor air sampling based on location in relation to an area of groundwater contamination coming from the site. Beginning next month, EPA will work with identified owners or residents to schedule appointments for sub-slab soil and indoor air sampling.



Vapor mitigation system installed on the outside of a house.

Site history

The site consists of the Fall Creek well field and potential sources of the groundwater contamination. The underground water has been affected by chemicals typically used in a variety of industries such as dry cleaners and metalwork shops. These chemicals include volatile organic compounds, or VOCs. VOCs come from petroleum products. The VOCs have names such as tetrachlorethene, or PCE; trichloroethene, or TCE; cis-1,2-dichloroethene, or cis-1,2-DCE; and vinyl chloride. All are known to be harmful to people if exposed at high enough levels.

Site investigations have identified contaminants in the wellhead protection area of the Fall Creek well field that serves Indianapolis-area customers. The local water company is Citizens Water, and it operates nine active municipal wells in the Fall Creek well field. These wells are among the oldest in the well system dating back to the 1920s and contribute up to 44 percent of water intake from the well field. VOCs have historically been detected in five of the wells. In one of the five wells, vinyl chloride was detected at amounts above the EPA's Safe Drinking Water Act Maximum Contaminant Level, or MCL. However, that well has been removed from service. Citizens Water treats all water and continuously monitors and blends the water before distributing it to the public.